

```

PPPPPPPPPPPPP  AAAAAAAA  SSSSSSSSSSS  RRRRRRRRRRRR  TTTTTTTTTTTT  LLL
PPPPPPPPPPPPP  AAAAAAAA  SSSSSSSSSSS  RRRRRRRRRRRR  TTTTTTTTTTTT  LLL
PPPPPPPPPPPPP  AAAAAAAA  SSSSSSSSSSS  RRRRRRRRRRRR  TTTTTTTTTTTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPP   PPP  AAA  AAA  SSS  RRR  RRR  TTT  LLL
PPPPPPPPPPPPP  AAA  AAA  SSSSSSSSS  RRRRRRRRRRRR  TTT  LLL
PPPPPPPPPPPPP  AAA  AAA  SSSSSSSSS  RRRRRRRRRRRR  TTT  LLL
PPPPPPPPPPPPP  AAA  AAA  SSSSSSSSS  RRRRRRRRRRRR  TTT  LLL
PPP   AAAAAAAA  SSS  RRR  RRR  TTT  LLL
PPP   AAAAAAAA  SSS  RRR  RRR  TTT  LLL
PPP   AAAAAAAA  SSS  RRR  RRR  TTT  LLL
PPP   AAA  AAA  SSSSSSSSSSS  RRR  RRR  TTT  LLL
PPP   AAA  AAA  SSSSSSSSSSS  RRR  RRR  TTT  LLL
PPP   AAA  AAA  SSSSSSSSSSS  RRR  RRR  TTT  LLL

```

PPPPPPPP PAAAAAA SSSSSSSS EEEEEEEEEE XX XX PPPPPPPP 000000
PPPPPPPP PAAAAAA SSSSSSSS EEEEEEEEEE XX XX PPPPPPPP 000000
PP PP AA AA SS EE XX XX PP PP 00 00
PP PP AA AA SS EE XX XX PP PP 00 00
PP PP AA AA SS EE XX XX PP PP 00 00
PPPPPPPP AA AA SSSSSS EEEEEEEEEE XX XX PPPPPPPP 00 00
PPPPPPPP AA AA SSSSSS EEEEEEEEEE XX XX PPPPPPPP 00 00
PP AAAAAAAA SS EE XX XX PP 00 00
PP AAAAAAAA SS EE XX XX PP 00 00
PP AA AA SS EE XX XX PP 00 00
PP AA AA SSSSSSSS EEEEEEEEEE XX XX PP 00 00
PP AA AA SSSSSSSS EEEEEEEEEE XX XX PP 00 00

LL IIIIII SSSSSSSS
LL IIIIII SSSSSSSS
LL SS SS
LLLLLLLLLL IIIIII SSSSSSSS
LLLLLLLLLL IIIIII SSSSSSSS

(2)	46	DECLARATIONS
(3)	75	PASS\$EXPO_F - Return binary exponent of F_floating
(4)	114	PASS\$EXPO_D - Return binary exponent of D_floating
(5)	153	PASS\$EXPO_G - Return binary exponent of G_floating
(6)	192	PASS\$EXPO_H - Return binary exponent of H_floating

```
0000 1 .TITLE PASSEXPO - Return binary exponent of floating values
0000 2 .IDENT /1-001/ ; File: PASEXPO.MAR Edit: SBL1001
0000 3
0000 4
0000 5 :*****
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0000 24 :*
0000 25 :*
0000 26 :*****
0000 27 :*
0000 28 :*
0000 29 :++
0000 30 :FACILITY: Pascal Language Support
0000 31
0000 32 :ABSTRACT:
0000 33
0000 34 : This module contains four routines which return the binary exponent
0000 35 : of a floating value for each of the four floating data types.
0000 36
0000 37 :ENVIRONMENT: Runs at any access mode, AST Reentrant
0000 38
0000 39 :AUTHOR: Steven B. Lionel, CREATION DATE: 4-Nov-1980
0000 40
0000 41 :MODIFIED BY:
0000 42
0000 43 :1-001 - Original. SBL 4-Nov-1980
0000 44 :--
```

0000 46 .SBTTL DECLARATIONS
0000 47
0000 48 LIBRARY MACRO CALLS:
0000 49
0000 50 NONE
0000 51
0000 52 EXTERNAL DECLARATIONS:
0000 53
0000 54 .DSABL GBL ; Force all external symbols to be declared
0000 55 NONE
0000 56
0000 57 MACROS:
0000 58
0000 59 NONE
0000 60
0000 61 EQUATED SYMBOLS:
0000 62
0000 63 NONE
0000 64
0000 65 OWN STORAGE:
0000 66
0000 67 NONE
0000 68
0000 69 PSECT DECLARATIONS:
0000 70
00000000 71 .PSECT _PAS\$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 72 EXE, RD, NOWRT, LONG
0000 73

0000 75 .SBTTL PAS\$EXPO_F - Return binary exponent of F_floating
0000 76 :++
0000 77 : FUNCTIONAL DESCRIPTION:
0000 78 :
0000 79 : This routine returns the unbiased binary exponent of an F_floating value.
0000 80 :
0000 81 : CALLING SEQUENCE:
0000 82 :
0000 83 : Result.wl.v = PAS\$EXPO_F (Single.rf.r)
0000 84 :
0000 85 : FORMAL PARAMETERS:
0000 86 :
0000 87 : Single - F_floating argument
0000 88 :
0000 89 : IMPLICIT INPUTS:
0000 90 :
0000 91 : NONE
0000 92 :
0000 93 : IMPLICIT OUTPUTS:
0000 94 :
0000 95 : NONE
0000 96 :
0000 97 : ROUTINE VALUE:
0000 98 :
0000 99 : The unbiased binary exponent of the argument
0000 100 :
0000 101 : SIDE EFFECTS:
0000 102 :
0000 103 : SS\$_ROPRAND - if the argument is a reserved operand
0000 104 :
0000 105 :--
0000 106 .ENTRY PAS\$EXPO_F, ^M<> ; Entry point
0000 107
0002 108
50 04 BC 08 07 EF 0005 110 TSTF @4(AP) ; Test for reserved operand
50 00000080 BF C2 000B 111 EXTZV #7, #8, @4(AP), R0 ; Fetch exponent
04 0012 112 SUBL2 #128, R0 ; Unbias exponent
RET ; End of routine PAS\$EXPO_F

0013 114 .SBTTL PAS\$EXPO_D - Return binary exponent of D_floating
0013 115 :++
0013 116 : FUNCTIONAL DESCRIPTION:
0013 117 :
0013 118 : This routine returns the unbiased binary exponent of a D_floating value.
0013 119 :
0013 120 : CALLING SEQUENCE:
0013 121 :
0013 122 : Result.wl.v = PAS\$EXPO_D (Double.rd.r)
0013 123 :
0013 124 : FORMAL PARAMETERS:
0013 125 :
0013 126 : Double - D_floating argument
0013 127 :
0013 128 : IMPLICIT INPUTS:
0013 129 :
0013 130 : NONE
0013 131 :
0013 132 : IMPLICIT OUTPUTS:
0013 133 :
0013 134 : NONE
0013 135 :
0013 136 : ROUTINE VALUE:
0013 137 :
0013 138 : The unbiased binary exponent of the argument
0013 139 :
0013 140 : SIDE EFFECTS:
0013 141 :
0013 142 : SSS_ROPRAND - if the argument is a reserved operand
0013 143 :
0013 144 :--
0013 145 :
0000 0013 146 .ENTRY PAS\$EXPO_D, ^M<> ; Entry point
0015 147 :
50 04 BC 08 07 73 0015 148 TSTD @4(AP) ; Test for reserved operand
50 00000080 8F C2 001E 0018 149 EXTZV #7, #8, @4(AP), R0 ; Fetch exponent
04 0025 150 SUBL2 #128, R0 ; Unbias exponent
04 0025 151 RET ; End of routine PAS\$EXPO_D

0026 153 .SBTTL PAS\$EXPO_G - Return binary exponent of G_floating
0026 154 :++
0026 155 : FUNCTIONAL DESCRIPTION:
0026 156 :
0026 157 : This routine returns the unbiased binary exponent of a G_floating value.
0026 158 :
0026 159 : CALLING SEQUENCE:
0026 160 :
0026 161 : Result.wl.v = PAS\$EXPO_G (Double.rg.r)
0026 162 :
0026 163 : FORMAL PARAMETERS:
0026 164 :
0026 165 : Double - G_floating argument
0026 166 :
0026 167 : IMPLICIT INPUTS:
0026 168 :
0026 169 : NONE
0026 170 :
0026 171 : IMPLICIT OUTPUTS:
0026 172 :
0026 173 : NONE
0026 174 :
0026 175 : ROUTINE VALUE:
0026 176 :
0026 177 : The unbiased binary exponent of the argument
0026 178 :
0026 179 : SIDE EFFECTS:
0026 180 :
0026 181 : SSS_ROPRAND - if the argument is a reserved operand
0026 182 :
0026 183 :--
0026 184 :
0000 0026 185 .ENTRY PAS\$EXPO_G, ^M<> ; Entry point
0028 186 :
0028 187 TSTG a4(AP) : Test for reserved operand
50 04 BC 0B 04 EF 002C 188 EXTZV #4, #11, a4(AP), R0 : Fetch exponent
50 00000400 8F C2 0032 189 SUBL2 #1024, R0 : Unbias exponent
04 0039 190 RET : End of routine PAS\$EXPO_G

003A 192 .SBTTL PAS\$EXPO_H - Return binary exponent of H_floating
 003A 193 :++
 003A 194 : FUNCTIONAL DESCRIPTION:
 003A 195 :
 003A 196 : This routine returns the unbiased binary exponent of an H_floating value.
 003A 197 :
 003A 198 : CALLING SEQUENCE:
 003A 199 :
 003A 200 : Result.wl.v = PAS\$EXPO_H (Quad.rh.r)
 003A 201 :
 003A 202 : FORMAL PARAMETERS:
 003A 203 :
 003A 204 : Quad - H_floating argument
 003A 205 :
 003A 206 : IMPLICIT INPUTS:
 003A 207 :
 003A 208 : NONE
 003A 209 :
 003A 210 : IMPLICIT OUTPUTS:
 003A 211 :
 003A 212 : NONE
 003A 213 :
 003A 214 : ROUTINE VALUE:
 003A 215 :
 003A 216 : The unbiased binary exponent of the argument
 003A 217 :
 003A 218 : SIDE EFFECTS:
 003A 219 :
 003A 220 : SSS_ROPRAND - if the argument is a reserved operand
 003A 221 :
 003A 222 :--
 003A 223 :
 0000 003A 224 .ENTRY PAS\$EXPO_H, ^M<> ; Entry point
 003C 225 :
 50 04 BC 04 BC 73FD 003C 226 TSTH #4(AP) ; Test for reserved operand
 50 00004000 8F C2 0040 227 EXTZV #0, #15, #4(AP), R0 ; Fetch exponent
 04 04 046 0046 228 SUBL2 #16384, R0 ; Unbias exponent
 004D 229 RET ; End of routine PAS\$EXPO_H
 004E 230 004E 231 .END ; End of module PAS\$EXPO

PASSEXPO Symbol table

- Return binary exponent of floating val 16-SEP-1984 01:24:54 VAX/VMS Macro V04-00
6-SEP-1984 11:30:34 [PASRTL.SRC]PASEXPO.MAR;1

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(6)

PASSEXPO_D	00000013	RG	01
PASSEXPO_F	00000000	RG	01
PASSEXPO_G	00000026	RG	01
PASSEXPO_H	0000003A	RG	01

! Psect synopsis !

PSECT name	Allocation	PSECT No.	Attributes
ABS	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
PASSCODE	0000004E (78.)	01 (1.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	10	00:00:00.09	00:00:00.70
Command processing	74	00:00:00.66	00:00:03.46
Pass 1	64	00:00:00.50	00:00:01.97
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	52	00:00:00.41	00:00:01.92
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	206	00:00:01.70	00:00:08.09

The working set limit was 750 pages.
2491 bytes (5 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 4 non-local and 0 local symbols.
231 source lines were read in Pass 1, producing 19 object records in Pass 2.
0 pages of virtual memory were used to define 0 macros.

-----+
! Macro library statistics !
+-----

Macro Library name

Macros defined

\$255\$DUA2B:[SYSLIB]STARLET-MIB:2

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL - TRACEBACK)/LIS=L1SS:PASEXPO/DBJ=OBJ\$S:PASEXPO MSRC\$S:PASEXPO/UPDATE=(ENH\$S:PASEXPO)

0294 AH-BT13A-SE
VAX/VMS V4.0

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LIS

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LIS

PASFAB
LIS

PASFINDK
LIS

PASFVINPU
LIS

PASFIND2
LIS

PASFVOUTP
LIS

PASGET
LIS

PASGOTO
LIS

PASHALT
LIS

PASHANDLE
LIS

PASHEAP
LIS